

# Memorandum

To : Jim Steele Date : May 30, 1990  
Environmental Services Division

From : Department of Fish and Game -- Region 1

Subject: An Evaluation of Mattole River Chinook and Coho Salmon Decline; What is Known, Not Known and Why

On May 2, 1990 you requested that I respond specifically to the subject: the decline of chinook and coho salmon in the Mattole River. This was a change from the original assignment to evaluate the specific hydrologic analysis submitted by the THP proponents and any data available by the Mattole groups. If this type of analysis is needed, please advise. Richard Laven is conducting a hydrologic analysis for Whitethorn Sanctuary Inc. which should be completed next week.

## Executive Summary

Excerpts from the California Fish and Wildlife Plan, Volume III, October 1, 1965 describing salmon and steelhead inventory on the Mattole River...

### "Critical Factors in the Habitat"

We feel the Mattole River would support much much larger runs of salmon and steelhead if current abuses of the watershed were to be discontinued, especially poor logging practices.

The effects of poor forest practices is the primary factor limiting present runs of anadromous fish in this drainage. The by-products of logging increased water temperatures, reduction of riparian vegetation, destruction of habitat, and blocking fish from spawning areas - could be drastically reduced by better enforcement or interpretation of the Forest Practices Act.

To realize full potential of the Mattole River for fisheries production, several steps should be taken: (1) Habitat improvement by removal of existing accumulations of logging debris, especially those that are barriers to upstream migration; (2) Reforestation of watershed where acute problems of

existing and potential erosion are present; and (3) Thorough surveys of existing conditions to permit management of the resource by knowledge, not guesswork. "

The Department currently conducts physical and biological stream evaluations in the Mattole River Basin only after higher priority administrative items and agendas are completed. Resource monitoring is attempted sporadically because of private land access restrictions and the lack of personnel. Most of the Mattole River resource monitoring is done by private contractors or other agencies.

Prior to 1987, Region 1 personnel conducted very few stream surveys in the Mattole Basin because of poor stream access and the potential conflict with controlled substance growers. The emphasis on most salmon restoration work was on the Klamath and Eel River systems. Most current Mattole River habitat surveys and modifications are under the direction of Gary Flossi, California Department of Fish and Game (DFG) Habitat Supervisor II, in conjunction with California Conservation Corps (CCC) personnel or private contractors under Inland Fisheries Division (IFD) direction. Local contractors have conducted surveys and fishery restoration work under contract with DFG utilizing Proposition 19 and 70 funds.

Although habitat and fish resource surveys are limited for the Mattole Basin, it is believed the CCC personnel and private contractors have eliminated most fish barriers.

In the last three years Region 1 personnel have collected population data for index reaches in a few headwater tributaries, specifically Bridge Creek, Van Arkin Creek (local name), North and South Fork Bear Creek. Weldon Jones, Region 3 fishery biologist, shocked the Mattole headwaters in 1981.

Studies of the Mattole Estuary are being conducted as part of a cooperative research effort between the United States Bureau of Land Management and the Humboldt State University which began in 1984 and will continue until 1991. Preliminary evaluation of this data indicates that the estuary habitat is severely limited for over-summering chinook in the coastal lagoon. Lower Mattole water temperatures are too warm to provide refuge for chinook or coho, and pool habitat is limited.

Spawning counts are made by the Mattole Watershed Salmon Support Group in conjunction with Coastal Headwaters Association personnel, often under DFG administered proposition funds. Their data indicates a decade of salmon stock decline. There is no other corroborative or rebutting data available.

A Pacific Fisheries Management Council's Review of 1989 Ocean Salmon Fisheries reports ocean salmon landings in the Klamath Management Zone (KMZ) have been severely restrictive since 1985 and stocks within the Klamath Basin have increased. The level of the commercial harvest does not explain the decline in Mattole River stocks.

In summary, there is no definitive data to demonstrate a specific reason for salmon decline in the Mattole River. Subjective evidence indicates that the reduction of suitable instream habitat and a corresponding decrease in water quality is the most prudent explanation. These factors include severe siltation, aggradation of the streambed, and sedimentation, high summer water temperatures and domestic water use, and the absence of riparian habitat, suitable stream temperatures, and woody debris for cover.

#### Discussion

There appears to be little dissension between groups regarding the impact of past logging practices in the Mattole River Basin. Water Resources (1973) concluded:

"In retrospect, it is difficult to point the finger of blame for the condition of the Mattole Watershed at any one faction. It merely points out that poor logging practices, when used on land that very possibly should not have been logged in the first place, coupled with overgrazing (and forest land conversion to grazing) and devastating wildfire have reduced a fragile watershed to a point from which it may never recover."

Many Mattole River tributaries have sediment in storage and continue to erode through road slump and natural processes. Water temperatures are warm due to the absence of shade canopy and flow over aggraded stream bottoms lacking large woody debris. Domestic water use is responsible for decreasing flows in some streams. Some streams still possess moderate migration barriers. It is apparent that many streams that now support steelhead, because they can tolerate warmer water temperature, could and should support salmon if the above conditions are remedied.

Coho salmon are the most habitat limited species. They require cool pools scoured by woody debris or rocky outcrops. The remaining bulk of the coho population exists in the Mattole headwaters. Coho are found in the headwaters of the Mattole and its tributaries and Mill Creek near Petrolia. The status of this fishery habitat is unknown.

### Spawning Stock

The Mattole Watershed Salmon Support Group (MWSSG) made salmon spawner counts in the Mattole River from 1981 through 1989, usually under contract with DFG. Their annual reports are available in the DFG contract section. No close scrutiny was made of the MWSSG escapement estimates. The data consists of actual fish counts and should be reflective of population trends because the same surveyors made the yearly counts. I have consulted with Gary Flossi and Weldon Jones and there is no data available to corroborate or rebut the spawning stock data submitted.

The Mattole adult chinook and coho escapement data as presented by the MWSSG for the period of 1981-1989 is as follows. Klamath River fall-run chinook escapements are included for comparison.

Year	Mattole River		Klamath River
	Chinook	Coho	Chinook
1981	3,000	500	77,300
1982	1,800	600	65,000
1983	1,200	240	56,800
1984	1,000	350	45,600
1985	600	300	63,400
1986	800	275	192,400
1987	1,500	1,000	204,100
1988	600	275	186,200
1989	150	50	122,500

Clearly, a decline is evident for Mattole stocks over the decade. This does not appear to be the case for the Klamath River stocks.

Joe Lesh, Associate Fishery Biologist in Eureka, was consulted to discuss the potential impact of ocean fisheries on Mattole River stocks. Mattole River chinook are believed to move north into the KMZ (most north coast chinook stocks travel north). Commercial harvest has been restricted in the KMZ since 1985 and increases in the Shelter Cove salmon landings did not occur. Klamath River stock abundance increased because of harvest limitations within the KMZ. Mattole River chinook stocks should have responded similarly.

### Tributary Conditions

Our files were scanned for field notes on the Mattole tributaries. Most of the Mattole headwater streams have not been surveyed by either Region 1 or 3 in the last decade. The CCC has done some recent surveys to develop work plans on Stanley, Bridge, Van Arkin and Baker Creek.

The collective "health" of the Mattole tributaries is generally unknown. The "Elements of Recovery" published by the Mattole Restoration Council, December 1989 under contract with DFG inventoried upslope sources of sedimentation in the Mattole River Basin to assist in developing a watershed restoration approach. Not all streams are listed in the publication but the information does assist in developing an overview of river habitat conditions.

Summary

Data for the Mattole River and tributaries, especially in the area of influence is lacking. Habitat evaluations, over-summer rearing water temperatures, species and fish population data are not available for most streams.

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